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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/736,073	12/13/2000	David J. Elliott	UV-102J	7710

7590 10/02/2003  
Iandiorio & Teska  
260 Bear Hill Road  
Waltham, MA 02451-1018

EXAMINER
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CROWELL, ANNA M

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 10/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/736,073

Applicant(s)

ELLIOTT ET AL.

Examiner

Michelle Crowell

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-20 and 23-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-20 and 23-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION*****Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 15, 2003 has been entered.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 1763

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1,7-13, 17-20, 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826).

Referring to Figures 3 and 10, column 3, lines 27-52, column 4, lines 22-36, and column 7, line 55 – column 8, line 17, Murakami discloses an apparatus which uses a rectangular ultraviolet laser beam 30 and reactive gas to deposit metallic film on the substrate 104. The apparatus includes a chamber 103, glass window 111 (UV window) located on the top of chamber 103, beam expander 107 (beam forming module), rectangular ultraviolet laser beam 30, gas inlet port 102 (gas injection module), gas exhaust port connected to exhaust gas treatment 117 (gas exhaust module), heater 125 (heating elements) and X-Y stage 112 for heating and securely holding the substrate (vacuum chuck), dichroic mirror 109 for adjusting the angle of the rectangular beam, laser oscillator 20 (UV radiation source raw output), and object lens 110.

In addition, while the gas inlet and outlet are stationary, the X-Y stage 112 moves the substrate 104 to the desired position for deposition.

Regarding Claims 7-13 and 25

The apparatus of Murakami is capable of administering the various claimed processes with the appropriate processing materials supplied. (i.e. etching reaction, deposition reaction, oxidation reaction, reduction reaction, melting reaction, reaction for modifying a metallic or non-metallic film, polymerization or UV curing reaction, and doping reaction). Furthermore, a claim containing a “recitation with respect to the

Art Unit: 1763

manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Murakami fails to specifically teach that the gas exhaust module is inside the chamber and at least a second fluid or vapor to the substrate surface.

Referring to Figure 2, column 4, lines 33-40, and column 4, line 64-column 5, line 4, Mannava et al. teaches a processing apparatus having a gas exhaust module 48 located inside the chamber to remove reaction gas products near the substrate. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the exhaust module of Murakami inside the chamber as taught by Mannava et al. in order to remove reaction gas products near the substrate.

Referring to Figure 2, column 6, lines 15-31, Mannava et al. teaches a processing apparatus providing multiple gases 52 and 86 (a second fluid or vapor) to the substrate surface in order to deposit the desired film layer. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami with a second fluid or vapor to the substrate surface as taught by Mannava et al. in order to deposit the desired film layer.

4. Claims 2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826) as applied to claims 1,7-13, 17-20, 24-29 above, and further in view of Elliott et al. (U.S. 5,814,156).

The teachings of Murakami in view of Mannava et al. are discussed above.

Art Unit: 1763

Murakami in view of Mannava et al. fails to teach the wavelength of the UV radiation source raw output, energy level of the rectangular beam, optical elements, two cylindrical refractive elements.

Referring to column 4, lines 4-15, and column 5, lines 53-59, Elliott et al. teaches an apparatus which uses an ultraviolet radiation beam to clean (etch) the surface of a substrate. The laser source 22 provides a pulsed beam 24 (ultraviolet radiation beam) at wavelengths of 248 nm and 193 nm. Typical energy density levels at 248 nm range from 250-1500 mJ/cm<sup>2</sup> (0.25 – 1.5 J/cm<sup>2</sup>). The laser source 22 further includes a beam expanding system 26 (beam forming module) made up of two cylindrical mirrors 54 and 56 (two cylindrical refractive elements). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami in view of Mannava et al. with the wavelength of the UV radiation source raw output, energy level of the rectangular beam, optical elements, and two cylindrical refractive elements as taught by Elliott et al. in order to ensure the appropriate wavelength and energy level necessary for the desired process. In addition, the cylindrical refractive elements (optical elements) create the rectangular beam in the desired dimension.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826) as applied to claims 1,7-13, 17-20, 24-29 above, and further in view of Schmidt et al. (U.S. 4,624,330).

The teachings of Murakami in view of Mannava et al. are discussed above.

Murakami in view of Mannava et al. fails to teach the dimensions of the rectangular beam.

Art Unit: 1763

Referring to column 2, lines 47-52, Schmidt et al. shows an ultraviolet beam 6 directed on vessel 1 with a length of 600 mm and width of 1mm.

In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami in view of Mannava et al. with the dimensions as shown by Schmidt et al. in order to ensure the appropriate dimension of the rectangular beam necessary for the desired process.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826) as applied to claims 1,7-13, 17-20, 24-29 above, and further in view of Giapis et al. (U.S. 5,002,631).

The teachings of Murakami in view of Mannava et al. are discussed above.

Murakami in view of Mannava et al. fails to teach a block shaped manifold.

Referring to Figure 1 and column 3, lines 13-15, Giapis et al. teaches a valve-controlled aperture 103 (block shaped manifold) with pump used to exhaust out gaseous reaction products. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami in view of Mannava et al.

Art Unit: 1763

with the valve-controlled aperture as taught by Giapis et al. in order for gaseous reaction products to be exhausted.

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826) as applied to claims 1,7-13, 17-20, 24-29 above, and further in view of Lee et al. (U.S. 6,374,770).

The teachings of Murakami in view of Mannava et al. are discussed above.

Murakami in view of Mannava et al. fails to teach an electronic control module.

Referring to Figure 1 and column 4, lines 46-50, Lee et al. teaches a CVD apparatus which uses a processor 34 operated by a computer program stored in memory 38 for a deposition reaction. The computer program selects the timing, mixture of gases, chamber pressure, chamber temperature, RF power levels, susceptor position, and other parameters of a particular process. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami in view of Mannava et al. with a processor as taught by Lee et al. in order to control various processing parameters to yield the optimum processing environment for deposition.

***Allowable Subject Matter***

8. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.



Art Unit: 1763

*Response to Arguments*


9. Applicant's arguments with respect to claims 1-14, 16-20, and 23-29 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (703) 305-1956. The examiner can normally be reached on M-F (8:00 - 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
**LUZALEJANDRO-MULERO**  
**PRIMARY EXAMINER**

AMC   
September 30, 2003